UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/563,437 | 01/05/2006 | Takemori Takayama | 2005_2071A | 4545 |

513 7590 07/16/2009

WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

| EXAMINER | |
|---|---|
| YEE, DEBORAH | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1793 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 07/16/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/563,437 | TAKAYAMA ET AL. | |
| | Examiner | Art Unit | |
| | Deborah Yee | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *4-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 15-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/5/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I claims 1 to 3 and 15 to 35 in the reply filed on May 11, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 4 to 14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3, 15, 26, 27, 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The recitation "type-carbide" is indefinite. The addition of the word "type" to an otherwise define expression is held to be indefinite because it is unclear what "type" was intended to convey. See MPEP 2173.05(b).

### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 to 3 and 15 to 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 02138442 ("JP-442") in view of Japanese patent 08-109450 ("JP-450").

8. The English abstract of JP-422 discloses a sintered sliding member comprising a back metal and a ferrous sintered sliding body which is combined to the back metal, wherein sintered material is a mixed body of powder material having constituents whose wt% ranges overlap those recited by the claims; and such overlap establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed ranges over the broader disclosure since the same utility to make an abrasion resistant seal surface for a floating seal is taught.

9. In addition, alloy of JP-422 contains 3-10 vol. % tungsten carbide which overlaps with 5 to 50% carbides recited by claim 1; and according to an oral translation by USPTO translator, prior art figure 4 teaches ferrous sintered material having a martensitic microstructure containing tungsten and chromium carbides.

10. JP-422 does not teach solid soluble carbon of 0.15 to 0.5% or retained austenite, as recited by one or more of the claims but such properties would be expected since composition and process of making by sinter bonding are closely met and in absence of evidence to the contrary.

11. JP-422 does not teach closed pores and/or recesses at the sliding surface in an area ratio of 1 to 10% as recited one or more of the claims but such limitation would be obvious and a matter of choice well within the skill of the artisan to incorporate since it is

a well know metallurgical concept to control pores and/or recesses at metal sliding surface in order that lubricant may pass through or can be impregnated to thereby improve wear or abrasion resistance, see English abstract of JP-450. Moreover, claimed area ratio of 1 to 10% would be well within the skill of the artisan to select depending on the desired lubrication sought which is productive of no new and unexpected results.

12. JP-422 teaches using sintered sliding member for floating seal. Moreover, the structural limitations recited by one or more of the claims defining a floating seal or thrust bearer are conventional and known in the art and would be expected or obvious.

13. In regard to claim 15, JP-422 teaches adding 3 to 10 wt% WC powder to form WC carbides dispersed in matrix. Although a coarseness of 40 microns or more is not taught, such would be obvious or expected since higher coarseness of carbide grains promotes higher wear resistance which is sought property.

14. In regard to claim 18, JP-422 teaches adding 1 to 5 wt% Fe-P powder which would be expected to form P compounds similar to present invention since composition and process of making are closely met.

15. In regard to other dependent claims, it would be obvious to add Cu alloy particles, and Mo and/or W particles to ferrous alloy to further harden surface and promote wear resistance in view of English abstract of JP-450.

16. Claims 1 to 3 and 15 to 35 are rejected under 35 U.S.C. 103 (a) as being unpatentable over WO/2002/070769 (“Sandberg”) in view of English abstract of

Japanese patents 08-109450 ("JP-450"), Japanese patent 363262402 ("JP-402") or Japanese patent 360050151("JP-151").

17. Sandberg in the claims on pages 10 and 11 discloses an abrasion resistant sliding material having a martensite microstructure with solid soluble carbon concentration of 0.2 -0.7% (overlaps claimed range of 0.15 to 0.5%) and contains carbide in a content of 14-25 vol. % carbides (overlaps claimed range of 5 to 50 vol. %) which include 10-20 vol. % $M_7C_3$ carbides and 3-8 vol. % MC carbides.

18. In addition, Sandberg discloses material composition having constituents whose wt% ranges overlap those recited by claims; such overlap in wt% ranges establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches the same utility (an abrasion resistant sliding material), see MPEP 2144.05.

19. Sandberg does not teach closed pores and/or recesses at the sliding surface in an area ratio of 1 to 10% as recited one or more of the claims but such limitation would be obvious and a matter of choice well within the skill of the artisan to incorporate since it is a well know metallurgical concept to control pores and/or recesses at metal sliding surface in order that lubricant may pass through or can be impregnated to thereby improve wear or abrasion resistance, see English abstract of JP-450. Moreover, claimed area ratio of 1 to 10% would be well within the skill of the artisan to select depending on the desired lubrication which is productive of no new and unexpected results.

20. Although the iron alloy of Sandberg is made by molten metal spray forming rather than sintering as recited by the claim, such would not be a patentable difference. Note that in a product-by-process claim, patentability is determined by the product per se and not its process of making. The burden falls to Applicant to show that any process steps associated with the claimed product result in a materially different product from those of the prior art because there is nothing in the record before the examiner to reasonably conclude that claimed product differs in kind from those obtained by the reference. Applicant teaches a bond produced by metal spraying is not as strong as sintering but no comparative data has been provided to establish its criticality.

21. Sandberg teaches using alloy material for wear parts in machines and equipment which would include sliding member with metal back, in general, such as connecting device, floating seal or thrust bearer. In regard to recited structure limitations, they are standard and conventional for wear parts and would be expected or obvious to incorporate.

22. In regard to other dependent claims, it would be obvious to add Cu alloy particles, P, Mo and/or W particles to ferrous alloy to further harden surface and promote wear resistance in view of English abstract of JP-450, JP-151 or JP-402.

23. Claims 1 to 3 and 15 to 35 are rejected under 35 U.S.C. 103 (a) as being unpatentable over US Patent 7,297,177 (“Sandberg-177”) ”) in view of English abstract of Japanese patent 08-109450 (“JP-450”), Japanese patent 363262402 ("JP-402”) or Japanese patent 360050151(“JP-151”).

24. Sandberg-177 in the claims in columns 8 to 10 discloses an abrasion resistant sliding sintered material having a tempered martensite microstructure with solid soluble carbon concentration of 0.3 -0.7% (overlaps claimed range of 0.15 to 0.5%) and contains carbide in a content of 6 to 13 vol. % carbides (overlaps claimed range of 5 to 50 vol. %) which include Vanadium-rich MC carbides.

25. In addition, Sandberg -177 discloses material composition having constituents whose wt% ranges overlap those recited by claims; such overlap in wt% ranges establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches the same utility (an abrasion resistant sliding material), see MPEP 2144.05.

26. Sandberg-177 does not teach closed pores and/or recesses at the sliding surface in an area ratio of 1 to 10% as recited one or more of the claims but such limitation would be obvious and a matter of choice well within the skill of the artisan to incorporate since it is a well know metallurgical concept to control pores and/or recesses at metal sliding surface in order that lubricant may pass through or can be impregnated to thereby improve wear or abrasion resistance, see English abstract of JP-450. Moreover, claimed area ratio of 1 to 10% would be well within the skill of the artisan to select depending on the desired lubrication which is productive of no new and unexpected results.

27. Sandberg teaches using alloy material to make wear parts for working tools. Since prior art alloy material has high wear resistance, then it would be obvious to also

use it as sliding member with metal back, in general, such as connecting device, floating seal or thrust bearer. In regard to recited structure limitations, they are standard and conventional for wear parts and would be expected or obvious to incorporate.

28. In regard to other dependent claims, it would be obvious to add Cu alloy, Mo, W and/or P powder to ferrous alloy to further harden surface and promote wear resistance in view of English abstract of JP-450, JP-402 or JP-151.

29. Claims 1 to 3 and 15 to 35 are rejected under 35 U.S.C. 103 (a) as being unpatentable over US Patent 5,936,169 ("Pinnow") in view of English abstract of Japanese patents 08-109450 ("JP-450"), Japanese patent 363262402 ("JP-402") or Japanese patent 360050151("JP-151").

30. The claims of Pinnow disclose an iron alloy material having a composition with constituents whose wt% ranges overlap those recited by claims; such overlap in wt% ranges establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches the same utility (an abrasion resistant sliding bearing material), see MPEP 2144.05.

31. In addition, the alloy of Pinnow exhibits a martensitic microstructure containing uniformly distributed special carbides comprising $Cr_7C_3$ and MC carbides in the range of 16 to 36 vol. % which is within the claimed range of 5 to 50 vol. % recited by claim 1.

32. Although Pinnow does not teach solid soluble carbon of 0.15 to 0.5% or retained austenite, as recited by one or more of the claims but such properties would be

expected since composition and process of making by sinter bonding are closely met and in absence of evidence to the contrary.

33. Pinnow does not teach closed pores and/or recesses at the sliding surface in an area ratio of 1 to 10% as recited one or more of the claims but such limitation would be obvious and a matter of choice well within the skill of the artisan to incorporate since it is a well know metallurgical concept to control pores and/or recesses at metal sliding surface in order that lubricant may pass through or can be impregnated to thereby improve wear or abrasion resistance, see English abstract of JP-450. Moreover, claimed area ratio of 1 to 10% would be well within the skill of the artisan to select depending on the desired lubrication which is productive of no new and unexpected results.

34. In regard to other dependent claims, it would be obvious to add Cu alloy, Mo, W and/or P to ferrous alloy to further harden surface and promote wear resistance in view of English abstracts of JP-450, JP-402, and JP-151

35. Pinnow on lines 35 to 44 in column 20 teaches using alloy material in many fields of application including wear parts, such as bearing or clad composites, barrels or liners and, in general, also include connecting device, floating seal or thrust bearer. Moreover, in regard to recited structure limitations, they are standard and conventional for wear parts and would be expected or obvious to incorporate.

36. Claims 1, 3 and 16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Reference AO cited by Applicant in IDS filed January 5, 2006.

37. Ferrous material alloy examples in the tables of Reference AO closely meet the claimed composition and carbide content recited by the claims. Moreover, according to the figures on page 1, soluble carbide at 0.15 to 0.5 wt% is met depending on the annealing temperature. Although martensite phase is not disclosed, such would be expected since composition and carbide limitation are closely met.

***Double Patenting***

38. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

39. Claims 1, 3, 16, 18, and 35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 11 to 15 of copending Application No 11/108749. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both disclose sliding materials with a martensite parent phase containing solid solution

carbon in the range of 0.15 to 0.5 wt% and a composition with constituents and carbides in wt% ranges that are overlapping; and such similarities establishes a prima facie case of obviousness. Moreover, it would be obvious to applied co-pending sliding surface material to backing similar to pending claims since its objective is to protect against wear and abrasion.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

40. Claims 1, 16, 18 and 35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/071,469. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both disclose sliding materials with a martensite parent phase containing solid solution carbon in the range of 0.15 to 0.5 wt% and a composition with constituents and carbides in wt% ranges that are overlapping; and such similarities establishes a prima facie case of obviousness. Moreover, it would be obvious to applied co-pending sliding surface material to backing similar to pending claims since its objective is to protect against wear and abrasion.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1793

dy